



2012 ANNUAL REPORT

NICARAGUA-HONDURAS DAIRY VALUE CHAIN

www.livestockfish.cgiar.org

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A. Key Messages

- A.1** Synthesis of progress and challenges in implementing the CRP within the target value chain, including their significance for the SLOs addressed by the CRP and a brief description of any noteworthy re-orientation in the CRP in the target value chain

The first year of Livestock and Fish activities included value chain diagnosis, strategy development and identifying possible partners. Given the limited available funds, we put a lot of effort in proposal development and aligning existing (bilateral) projects with the Livestock and Fish framework. Based on identified value chain bottlenecks and (market) prospects, existing expertise and funding opportunities, the strategy in Nicaragua and Honduras focuses on the different value chain components as described in the following:

On input supply and farm productivity the focus is on both dry season feed availability (important to sustain milk production during the dry season from November to May in the Pacific zone) and increasing feed and forage options for heavy waterlogged soils in the Atlantic zone. Productivity is also addressed through sustainable intensification including the adoption of good practices and integrating natural resource management. Seed availability of improved forages for (small) farmers is another crucial constraint that will be addressed by Livestock and Fish. Another component that is addressed is the genetic characteristics of dual-purpose cattle, presently often insufficient to express the potential production increase through improved feed availability and management.

Dairy processing is addressed through farmer cooperatives and both local and national dairy industry, both at farm and processor level, with emphasis on milking hygiene, meeting quality standards, reducing losses and product diversification.

On the market component, apart from meeting (international) quality standards, we seek to add value of dairy products through identifying niche and specialty markets (e.g., artisanal cheese aimed at the Central American diaspora in the United States) and certification of environmental friendly products, including participating in carbon credit schemes.

- A.2** What was the most significant achievement/success story in the year (gender disaggregated where pertinent), with references to associated evidence and website links for more details.

Most significant achievements in this year have been of a diagnostic, institutional and proposal development character. Important constraints, opportunities and entry points of the dairy value chains in the region have been defined. Furthermore, mainly as a part of proposal development, we have established contacts with various stakeholders of the dairy value chains in the region, with emphasis on private sector and farmer cooperatives (including a cooperative (San Felipe, Boaco) with a relative large number of small female dairy farmers with one or two cows), and including development NGOs (Heifer International) and certification bodies (Rainforest Alliances). We have also strengthened our contacts with CATIE, a strategic partner with ample expertise on silvo-pastoral systems in combination with dairy production and payment for ecosystem services schemes.

From a concept development point of view, we have put a lot of effort in developing carbon insetting as a tool to enhance the dairy value chains. For farmers, to improve animal

productivity, increase adaptability to climate change and provide supplementary income; for companies, to reduce the environmental 'hoofprint' of the livestock sector and enable companies to keep carbon mitigation activities within their own supply chain. Livestock-related activities eligible for carbon credit certification have been identified at the smallholder farm level. Further, dairy companies interested in or already purchasing carbon credits will be identified, existing linkages of farmers to the private sector will be assessed and where applicable new linkages will be proposed.

This year the activities have been mainly focused on Nicaragua, and included:

- Value chain diagnosis, e.g., through workshops with main stakeholders on opportunities and constraints of the dairy value chain in Nicaragua
- Development of innovative concepts related to the dairy value chain, including carbon insetting and combining forage options with agroforestry practices.
- Proposal development
 - BMZ small grant on carbon insetting in dairy value chains, with national institutions (NARS Nicaragua), universities (Universidad Centro Americana, Nicaragua; Göttingen University, Germany), private sector (Centrolac, dairy industry) (rejected because of communication flaw between CIAT HQ and BMZ)
 - Austrian Development Agency with ILRI, Universidad Nacional Agraria (UNA) and BOKU on increasing the productivity of dual purpose cattle in Nicaragua through use of appropriate breed types and application of best husbandry practices (approved, implementation starts mid 2013)
 - Solidaridad/ Farmer Support Programme (Netherlands Government), in collaboration with CATIE, Rainforest Alliance, Heifer International, farmer cooperatives, private sector and government institutions) on improving the competitiveness and income of small and medium cattle farmers in Nicaragua through the implementation of good farm management practices and the creation of a sustainable both beef and dairy value chain, leading to the sustainable intensification of farms and the certification of products and processing plants that will facilitate access to specialized markets (pipeline, subject to pre-screening).
 - CRS USDA-proposal Food for Progress (FFPr): we formulated a proposal to contribute, mainly on dry-season feeding, dairy production management and farmer seed production (approved). This will contribute importantly to dairy value chain work in the northern part of Nicaragua, and strengthen relations with the farmer (cooperatives), processors and development organizations.
- **Bilateral projects (on-going)**

BMZ-BNI: integration of new forage hybrids to intensify agriculture and to mitigate climate change through regulation of nitrification in soil

Two experimental sites (coinciding with research sites where most Livestock and Fish activities will be concentrated) were selected in humid and sub humid zones in Nicaragua and experimental shoots of 41 *Brachiaria humidicola* hybrids were received from Cali, for establishing two experiments on the integration of new forage hybrids to intensify agriculture and to mitigate climate change through regulation of nitrification in soil.

CRS USDA-proposal Food for Progress (FFPr)

Discussions have started with CRS to start implementing the contribution of Livestock and Fish, with focus on (1) Improving (dry season) feeding systems and (dairy) production management (2) Improving quality of crop residues integrating a forage legume and (3) Establishing farmer-led seed production

B. Impact Pathway and Intermediate Development Outcomes (IDOs)

N/A

C. Progress along the Impact Pathway

C.1 Narrative of major achievements in the value chain

Key entry points identified during VC workshops and bilateral meetings (Nicaragua)

The main constraints do not lie in a lack of initiatives, but rather in a need to consolidate existing initiatives for greater efficiency and impact. The manner in which technical assistance is provided, as well as the manner in which project design is approached, needs to be modified. Change is not only required from the farmers but requires a concerted effort throughout the value chain to overcome barriers established by tradition.

The following lists main constraints and possible entry points for value chain innovation/improvement

1. Natural resource degradation

- Strategies for the mitigation of soil erosion and livestock areas degradation (degraded zones):

- > Promotion of silvo-pastoral systems (systematization of implemented actions)
- > Inventory of lessons learned, successes and failures
- > Developing methodologies for approaching different levels and raising awareness
- > Financial and marketing incentives (including payment for ecosystem services)
- > Sustainable intensification – mapping zones vulnerable to climate change

2. Inadequate animal nutrition (especially dry season feed availability)

- Ensuring forage quality and availability throughout the year

> Technology packages for improved forages, in view of ease adoption and biomass yield with an initial emphasis on grasses

- > Identifying zones for adoption of improved forages
- > Pasture management strategies
- > Forage and feed conservation strategies

3. Limited seed accessibility for farmers

- > Create alliances with companies
- > Establishment of community seed banks, farmer associations, and cooperatives
- > Farmer seed production
- > Productive modules, information management, and variety adoption
- > This element depends strongly on geographic location, but management is also an influence

4. Lack of entrepreneurship

- At an organizational level:

- > Promoting alliances between different levels within the value chain
 - > Having an integral vision, vertical and horizontal integration
 - > Capacity building (marketing and commercialization, exploiting the potential of established networks)
 - > Promoting farm recording (production, accounting, etc.)
 - > Involve farmers' children (adolescents): capacity building with emphasis on good practices
- Financial incentives:
 - > Improve access to long-term credit
 - > Develop farmer-friendly finance schemes

5. Product quality (Farm Level)

- Milking inspection systems within the industry
 - Technical assistance focused on quality
 - Cooperatives
- Promoting best management practices
 - > Milking, cooling, capacity-building, supporting farmers in equipment and infrastructure (milking parlours, water use)
 - > In order to improve milking and resource management, technical assistance is also necessary
 - > The milk industry destines some of its funds to ensure quality
 - > Milk quality guaranteed from the beginning to be able to enter the market
 - > "Moral" incentives
 - > Promote competition between communities
 - Motivate companies to control product quality
 - > Milk quality norm standardization
 - > National reference laboratory for milk quality

6. Markets

- > Improve market focus of cooperatives (in Nicaragua alone there are 736 cattle cooperatives)
- > Improve marketing skills

Progress will be measured in terms of (1) number of value chains stakeholders actively involved in the R4D platforms, (2) number of farmers adopting improved technologies and best practices, (3) volume, quality and diversity of dairy products, (4) added value of dairy products, both through improved quality and certification, (5) (niche) markets accessed, (6) number of (poor) consumers with (increased) access to high quality dairy products.

C.2 Progress towards outputs

Major successes in 2012 include the involvement of new stakeholders (especially private sector and farmer cooperatives) in value chain analysis and establishment of R4D platforms. Furthermore, new concepts were developed (with emphasis on ecosystem services and certification schemes) as part of proposal development with partners. In a joint ILRI-UNA-BOKU-CIAT proposal approved by ADA we managed to generate funds to identify and improve the genetic potential of dual purpose cattle in Nicaragua, being a crucial input to

the dairy value chain. The project will also include the identification of priorities and best-bet technical (health, feeding and breeding) and marketing interventions, as well as the respective research needs that would benefit the different gender and actor groups.

C.3 Progress towards the achievement of outcomes

The activities in 2012 have led to a better understanding of especially the private sector and farmer cooperatives environment. A wide range of stakeholders have been identified and some of have been involved in value chain characterization and proposal development, whereas also a start has been made to establish a platform including government institutions (Ministry of Agriculture, NARS, Universities), farmer cooperatives, private sector (dairy processing industry, organization on export promotion), NGOs (development organizations, e.g., Heifer, CRS), certification bodies (Rainforest Alliance) and non CG international agricultural research institutes (CATIE). In 2013, many of these partners will be involved in value chain assessment in the identified target areas and implementation of on-farm work, as part of the bilateral projects.

C.4 Progress towards Impact

N/A

C.5 Traffic Light Reporting of Progress against Outputs

For calendar year 2012 Center : CIAT		
Output Targets	Status	Explanation and evidence
Theme 2 Genetics		
Objective/Outcome 2.1		
Output 2.1.2 Genetically improved strains and conserved genetic resources to meet future needs"		
Milestones	Status	Explanation and evidence
2.1.2.1 Methods and capacities established to support breeding strategies in the target value chains	Partially accomplished	Funds secured to define and implement breeding strategies in the dairy value chain in Nicaragua as part of the ILRI-UNA-BOKU-CIAT "Better breeds" project. View project proposal
Theme 3 Feeds and Forages		
Objective/Outcome 3.1		
Output 3.1.3 "More feed of higher quality"		
Milestones	Status	Explanation and evidence
3.1.3.1 Superior food-feed-fodder and forage cultivars identified	Partially accomplished	<i>Brachiaria</i> hybrids (FONTAGRO project) being tested in target areas Livestock and Fish in Nicaragua (Central and Atlantic zone) for sustainable intensification (emphasis on improved milk production) and mitigation of climate change, most promising cultivars identified. Progress reports available: INFORME DE AVANCES DE PROYECTO
Theme 4 Value Chain Development		
Objective/Outcome 4.1		
Output 4.1.1 Methods and tools developed and applied to identify potential interventions for improved VC performance		
Milestones	Status	Explanation and evidence
4.1.1.1 Preliminary set of methods, models and tools for rapid VC assessment developed, and pre-tested	Partially accomplished	Pre-tested in dairy value chain Nicaragua (workshops, meetings) Workshop report available: Workshop report
4.1.1.2 VC assessments completed for the	Partially	Initiated Nicaragua (workshop reports available), Honduras from April 2013

target VCs	accomplished	onwards (link: see above)
4.1.1.3 Potential interventions at scale for improved value chain performance identified and prioritised by "Date"	Partially accomplished	Done for Nicaragua, related to project proposal development (Carbon insetting, Sustainable intensification of farms and the certification of products and processing plants that will facilitate access to specialized markets) Project proposal document available: Competitive beef and dairy through sustainable intensification and specialized market access Nicaragua
Output 4.1.3 Mechanisms for scaling up and out the successfully tested strategies for upgrading VC; CRP L&F documented influence that is fostering implementation at scale supported by an enabling environment"		
Milestones	Status	Explanation and evidence
4.1.3.2 Policy environment enhanced	Partially accomplished	On-going, so far as part of concept development in collaboration with partners (CATIE, Heifer). Project proposal document available: Competitive beef and dairy through sustainable intensification and specialized market access Nicaragua
Theme 5 Targeting and Sustainable Interventions		
Objective/Outcome 5.1: Effective targeting, implementation and scaling out of pro-poor sustainable animal sourced food value chains development action		
Output 5.1.1 Promising VCs and sites are identified		
Milestones	Status	Explanation and evidence
5.1.1.1.Potential areas for intervention in value chains in 2 countries characterized by the end of 2012: Nicaragua, Honduras	Partly accomplished	Stakeholder consultations to verify sites in Nicaragua completed. Workshop reports, project proposal documents, maps available. Livestock and Fish wiki Nicaragua value chain page. Geographic sites identified as ideal for piloting interventions identified (presence dairy industry, farmer cooperatives) in Boaco, Matagalpa and RAAS departments in Nicaragua. Available: Workshop reports , project proposal documents , maps
List of publications in ISI journals		
List of flagship products/ technologies/tools/ policies produced - Indicate with * those having an explicit target of women farmers - Indicate those assessed for likely gender-disaggregated impact; if not, provide the rationale why the given product		

does not qualify for this assessment	
List open access databases maintained and indicate number of users	
List electronic media such as knowledge banks, CRP and institutional home portals, websites, other ICT media used for information dissemination; indicate number of hits/views/requests	
List short and long term capacity development programs; Indicate number of trainees for each, sex-disaggregated, developed/developing country of origin	
List MSc and PhD students supervised, indicating gender, developed/developing country of origin	
List meetings/workshops/seminars with a significant science-policy interface (e.g. multiple high-level policy makers present)	Workshop on Value Chain Assessment Nicaragua (Oct 2012), with presence of representatives of Ministry of Enterprise Development (MIFIC), Ministry of Agriculture, NARS (INTA), private dairy sector (CANISLAC, Centrolac), farmer cooperatives (CONAGAN), consultants (Technoserve), CATIE, CIAT: Workshop report
List countries which are using the CRP results to define or modify national policies and strategies, noting which results and evidence	
List significant national or international agencies, private sector actors using the tools and results from the CRP in their on-the-ground implementation efforts, specifying which tools and results and evidence - Indicate number of times that the outputs from the CRP are being used to enhance gender equality	
List specialized genetic stocks (accessions and genotypes of wild relatives and landraces, special mapping populations, mutation stocks, etc.) for gene discovery and pre-breeding	
List published/identified new genes, markers, or QTLs and made available to scientists and breeder globally	
List new germplasm with improved traits shared with (public and private sector) partners for testing and release (via international	<i>Brachiaria</i> hybrids and accessions being evaluated on-farm, in collaboration with NARS (INTA-Instituto Nicaragüense de Tecnología Agropecuaria) and Agricultural

trials and nurseries)	University (UNA-Universidad Nacional Agraria). Progress reports and data available
List International Nurseries, Yield trials, PVS, etc. for germplasm evaluation conducted by CRP partners	
List varieties with CRP-parentage released by public and private sector partners globally	
List strategic value chains analyzed	Nicaragua dairy value chain (partially). Workshop report
List post-harvest technologies tested by the CRP and under dissemination by partners (including value-chain actors);	
Acreage under the CRP crop, total production, average farm yields, average profitability for small-scale farmers, number of small-scale producers Farm and plot level data should be broken down by different levels of poverty. Farm and plot-level data should be sex-disaggregated using the relevant units for showing gender inequality (i.e. in regions where intra-household gender inequality is significant, plot or area cultivated by men or women or the distribution of profits between men and women may be used in lieu of female-headed farm or household).	
List systems (with estimated population) analyzed/characterized and system drivers identified (dis-aggregated for how they support different socio-economic groups)	
List systems (with estimated population) in which the CRP is organizing R4D platforms, specifying the platforms	Dairy value chain Nicaragua, with emphasis on Boaco, Matagalpa departments. Estimated population: 200,000. Platforms consist of farmer cooperatives (Nicacetro, San Felipe), private dairy sector (Cattle hub in conjunction with Centrolac), Ministry of Agriculture (Magfor), NARS (INTA), National Agricultural University (UNA). Workshop report
List systems for which innovations (technologies, policies, practices, integrative approaches) and options for improvement at system level have been developed, specifying the relevant innovations or options - Identify by * innovations that are targeted at decreasing inequality between men and women in the regions where	Dairy value chains in Central America. Carbon in-setting concept in development and under research, in combination with best management practices. Include silvo-pastoral options in combination with improved forages. Draft policy brief available, as well as specific proposal document

the CRP is working	
List published research outputs utilized in targeted systems by CRP partners, noting which partners	
List systems for which CRP has identified feasible approaches for improving ecosystem services and for establishing positive incentives for farmers to improve ecosystem functions as per the CRP's recommendations (specify the types of services)	<p>Dairy value chains Central America, with emphasis on small and medium farmers in mixed crop-livestock systems with dual-purpose cattle. Approaches include carbon on-setting and product certification; services include use of silvo-pastoral options (legume trees) in combination with improved forages (grasses, legumes), to improve soil fertility and soil moisture content, reduce erosion, and increase cattle productivity.</p> <p>Documentation available: project proposal, publications</p>
Estimate the number of people who will potentially benefit from plans, once finalized, for the scaling up of strategies, giving your rationale	<p>The estimated number of small and medium mixed-crop livestock farmers with dual-purpose cattle in Nicaragua and Honduras is 400,000. The number of consumers of their products is at least 1 million. The number of people who will potentially benefit of the improved value chain is therefore at least 1.5 million. Source: FECALAC., 2006. Federación Centroamericana del Sector Lácteo. Requerimientos Tecnológicos y de Sanidad e Inocuidad para la Ganadería e Industria Láctea de Centroamerica. Propuesta de proyecto. San José, Costa Rica.</p>

D. Gender research achievements

N/A

E. Partnerships building achievements

We have established contacts with various stakeholders of the dairy value chains in the region, with emphasis on private sector and farmer cooperatives, and including development NGOs (Heifer International) and certification bodies (Rainforest Alliances). We have also strengthened our contacts with CATIE, a strategic partner with ample expertise on silvopastoral systems in combination with dairy production and payment for ecosystem service schemes. Consultations with representatives of the Ministry of Agriculture (including NARS) in both countries are underway. Especially the Ministry of Agriculture of Nicaragua (MAGFOR) is crucial in implementing the value chain innovations, as they provide a (legal) framework related to issues like traceability and payment for ecosystem services schemes.

F. Capacity Building

Within the framework of the value chain work no direct capacity building has taken place yet, but the workshops on value chain characterization and proposal development in Nicaragua have provided important insights on the dairy value chain, its main stakeholders and opportunities for innovations and improved market access of dairy products. Report available, with list of participants: [Workshop report](#)

G. Risk Management

List of the three to five major risks that could hinder the expected delivery of results by the CRP from your perspective and provide a description of the mitigation actions taken to better manage these risks.

- Insufficient resources to implement the value chain work in both countries. This year we have addressed this through putting a lot of emphasis on proposal development and fundraising (bilateral projects). As a result, we expect that for 2013
- Extreme weather events, in particular as we are focusing on vulnerable environments where a large part of poor smallholders are located. Mitigation through development of resilient technologies.
- Operational risk: Government controlled prices discourage investments to increase production and improve farms. Risk mitigation to identify and develop other incentive strategies.
- Market risk: Lack of demand of added value (e.g., certified) products. Mitigation through mechanisms to further expand niche markets.
- Political risk: Land confiscation in some parts of the country. Additional effort to ensure that farmers have land titles.

H. Lessons Learned

- Analysis of variance from what was planned:

- i. Description, if relevant, of research avenues that did not produce expected results, and description of implications for the CRP, such as new research directions and their expected outputs and outcomes.
 - We have not yet started research activities directly linked to the value chain work. During 2013 based on targeting and value chain assessment research avenues will be prioritized together with local partners, and to the extent possible harmonized with the on-going work (mainly the bilateral projects on *Brachiaria* grasses for humid areas in the Central and Atlantic zones of Nicaragua, dry-season feeding and forage seed production in the north of Nicaragua and genetic improvement of dual-purpose cattle).
- ii. Discussion of the cost and budget implications of the variance from the planned CRP.
 - While for 2013 we need additional CRP resources to improve human capacity in value chain assessment and targeting (including hiring of a consultant), we will continue developing fund raising initiatives with special emphasis on Honduras. For instance, Honduran farmer organizations and private sector have expressed interest in developing a similar proposal to the Solidaridad - Farmer Support Programme on improving dairy value chain competitiveness through sustainable intensification and specialized market access.
- iii. In the light of the progress accomplished, confirm whether the original impact pathways in the proposal still stand for your value chain or if amendments are needed to achieve expected impact. Implications of these amendments for the partnerships of the CRP.
 - Progress has been less than anticipated, especially regarding value chain assessment in general and activities in Honduras in particular. The original impact pathways however still stand and in 2013 we expect to provide more results directly addressing those.